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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,152	02/11/2004	Arlie R. Conner	59373US002	3103
32692	7590	05/10/2006	EXAMINER	
3M INNOVATIVE PROPERTIES COMPANY PO BOX 33427 ST. PAUL, MN 55133-3427			CARTER, WILLIAM JOSEPH	
			ART UNIT	PAPER NUMBER
			2875	

DATE MAILED: 05/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

5/2

Office Action Summary	Application No. 10/776,152	Applicant(s) CONNER, ARLIE R.	
	Examiner William J. Carter	Art Unit 2875	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,5,7,9-12,14-16,19,20,26,29 and 34-53 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,7,9-12,14-16,19,20,26,29 and 34-53 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9/9/05-1/30/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4, 5, 7, 9-12, 14, 16, 19, 20, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Handschy (6,038,005) in view of Magarill (5,625,738).

With respect to claim 1, Handschy discloses an illumination system having a plurality of light source modules (Fig. 4, item 52), an illumination target (item 46), and a system of optical elements (items 60, and 48) disposed between the plurality of light source modules and the illumination target. The system of optical elements images the emitting surfaces of the light source modules onto the illumination target creating a plurality of images of the emitting surfaces (Fig. 4 and Col. 10, lines 36-45). Handschy does not explicitly teach the target is a light tunnel having an entrance. Magarill, also drawn to illumination systems, teaches a target is a light tunnel (2) having an entrance (Fig. 1). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to use the light tunnel of Magarill in the illumination system of Handschy, in order to produce light at the exit end of the tunnel which is substantially uniform in power distribution (Abstract).

As for claim 2, Handschy further discloses the images of the emitting surfaces are substantially superimposed to form an illumination patch, and the illumination patch substantially fills the illumination target (Fig. 4).

As for claim 4, Handschy further discloses the shape of at least one of the emitting surface substantially matches the shape of the illumination target (Col. 10, lines 1-21).

As for claim 5, Handschy further discloses the shape of the illumination target is substantially square (Col. 10, lines 1-18).

As for claims 7 and 9, Handschy further teaches the shape of at least one of the light emitting surfaces is substantially square (Fig. 7A, item 68), the shape of the illumination target being substantially square, and the system of optical elements is configured so that the shape of the illumination patch substantially matches the shape of the illumination target (Col. 10, lines 1-21).

As for claim 10, Handschy further discloses the pluralities of light source modules are disposed in an array within a non-radially symmetrical aperture (Fig. 7A and 7B).

As for claim 11, Handschy further discloses the images of the emitting surfaces are closely packed (Fig. 18A-C and Col. 18, lines 35-38) thus forming an illumination patch that substantially fills the illuminating target.

As for claim 12, Handschy further discloses that the images of the emitting surfaces overlap thus forming an illumination patch that substantially fills the illumination target (Col. 2, lines 51-63).

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As for claim 14, Handschy further discloses the light source modules (Fig. 4, item 52) and the system of optical elements (item 60) are configured to form a plurality of light channels aimed substantially into the illumination target (Col. 10, lines 45-51).

As for claim 16, Handschy further discloses the light source modules (Fig. 3, item 52) are disposed substantially coplanar with each other and the system of optical elements (items 34 and 48) comprises means for aiming at least some of the light from each light source module substantially toward the illumination target.

As for claim 19, Handschy further discloses each light source module having a plurality of emitting surfaces of different colors disposed next to each other (Col. 10, lines 45-53).

As for claim 20, Handschy further discloses that each light source module comprises a first light emitting surface of a first color (Fig. 18B, item 164), a second light emitting surface of a second color (item 166) and a third light emitting surface a third color (item 168).

As for claim 23, Handschy further discloses the system of optical elements having dichroic mirrors (polarizing beam splitting cube, item 48, Col. 7, line 6).

As for claim 26, Handschy further discloses the first, second and third colors are primary colors (Col. 19, line 62-63).

As for claim 34, Handschy further disclose the illumination target (LCD, spatial light modulator, item 46) is an image forming devices.

As for claim 35, Handschy further discloses the images of the emitting surfaces (Fig. 18A, item 152) are substantially superimposed to form an illumination patch that is substantially fills the illumination target (item 46).

As for claim 36, Handschy further discloses the illumination patch overfills the illumination target (Col. 19, lines 3-10).

As for claim 37, Handschy further discloses the shape of at least one of the emitting surface substantially matches the shape of the illumination target (Col. 10, lines 1-21).

As for claim 38, Handschy further discloses the shape of the illumination target is substantially square (Col. 10, lines 1-18).

As for claims 39 and 40, Handschy further teaches the shape of at least one of the light emitting surfaces is substantially square (Fig. 7A, item 68), the shape of the illumination target being substantially square, and the system of optical elements is configured so that the shape of the illumination patch substantially matches the shape of the illumination target (Col. 10, lines 1-21).

As for claim 41, Handschy further discloses the pluralities of light source modules are disposed in an array within a non-radially symmetrical aperture (Fig. 7A and 7B).

As for claim 42, Handschy further discloses the images of the emitting surfaces are closely packed (Fig. 18A-C and Col. 18, lines 35-38) thus forming an illumination patch that substantially fills the illuminating target.

As for claim 43, Handschy further discloses that the images of the emitting surfaces overlap thus forming an illumination patch that substantially fills the illumination target (Col. 2, lines 51-63).

As for claim 44, Handschy further discloses that the illumination target is an active matrix liquid crystal image generator, which is a LCD having a plurality of pixels configured in a matrix to generate image.

As for claim 45, Handschy further discloses the light source modules (Fig. 4, item 52) and the system of optical elements (item 60) are configured to form a plurality of light channels aimed substantially into the illumination target (Col. 10, lines 45-51).

As for claim 47, Handschy further discloses the light source modules (Fig. 3, item 52) are disposed substantially coplanar with each other and the system of optical elements (items 34 and 48) comprises means for aiming at least some of the light from each light source module substantially toward the illumination target.

As for claim 48, Handschy further discloses an illumination system having a plurality of light source modules (Fig. 4, item 52), each light source module having a plurality of emitting surfaces of different colors disposed next to each other (Col. 10, lines 45-53).

As for claim 49, Handschy further discloses that each light source module comprises a first light emitting surface of a first color (Fig. 18B, item 164), a second light emitting surface of a second color (item 166) and a third light emitting surface a third color (item 168).

As for claim 50, Handschy further discloses the illumination target having the first, second, and third color zones, and the system of optical elements images the first emitting surface onto the first color zone, the second emitting surface onto the second color zone, and the third emitting surface onto the third color zone (Fig. 15B).

As for claim 51, Handschy further discloses the first, second and third colors are primary colors (Col. 19, line 62-63).

As for claim 52, Handschy further discloses the system of optical elements having dichroic mirrors (polarizing beam splitting cube, item 48, Col. 7, line 6).

As for claim 53, Handschy further discloses the system of optical elements having lenticular array (Fig.4, item 60 and Col. 10, lines 35-36) disposed between the plurality of light source modules (item 52) and the illumination target (item 46).

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Handschy and Magarill as applied to claim 1 above, and further in view of McClelland et al. (6,201,629).

With respect to claim 29, Handschy and Magarill teach all of the claimed elements, as disclosed above, as well as Handschy teaches an illumination system having a plurality of light source modules (Fig. 4, items 52), disposed in an array within a non-radially symmetrical aperture (Fig. 7A and 7B), an illumination target (item 46), and a system of optical elements (items 60 and 48) disposed between the plurality of light source modules and the illumination target and a spatial light modulator as the image-forming device but does not teach the spatial light modulator having a plurality of mirrors rotatable about a pivot axis. McClelland, drawn to mirror systems (although McClelland

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is drawn to mirror systems, this reference is not relied upon to teach "an illumination system;" Handschy teaches the illumination system with the use of a mirror (Abstract), which makes the combination of the references obvious), teaches a torsional micro-mechanical mirror system, a type of spatial light modulator, that is useful for video display systems since it is compact in size and can produce high resolution images at rapid frame rates, having a mirror (Fig. 1, item 3) that is rotatable about a pivot axis (Fig. 2A, item 7). The aperture of the mirror has a long dimension and a short dimension (Fig.3) and is oriented so that the long dimension is aligned with the pivot axis of the mirrors of the image-forming device. It would have been obvious to one having ordinary skill in the art at the time the invention was made to substitute the active matrix liquid crystal image generator of Handschy with the torsional micro-mechanical mirror system of McClelland so that the size of the image generator of Handschy can be reduced, and produce high resolution images at rapid frame rates.

Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Handschy and Magarill as applied to claim 45 above, and further in view of Anderson (5,997,150).

With respect to claim 46, Handschy and Magarill teach all of the claimed elements, as disclosed above, as well as Handschy teaches the light source modules disposed on a flat glass substrate (Fig. 7A, item 68) but does not teach the light source modules disposed tangentially to and along a spherical surface. Anderson shows LED's are mounted tangentially to and along a spherical surface in figure 6 and figure 7, in order to reduce chromatic beam distortion from LEDs at the edges of the array. The

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light from each LED intersects and focuses at a common focal point F (Col. 6, lines 12-25). It would have been obvious to one having ordinary skill in the art at the time the invention was made to mount the LEDs such that the light from each LED intersects and focuses at a common focal point as Anderson's illumination system in the illumination system of Handschy so that chromatic beam distortion from LEDs at the edges of the array can be reduced from Handschy's illumination system.

Response to Arguments

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation is found in the references, as disclosed above in the discussion of claim 46.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William J. Carter whose telephone number is (571)272-0959. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Renee S. Luebke can be reached on (571)272-2009. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

wjc
04/27/06



RENEE LUEBKE
PRIMARY EXAMINER